FIG.1

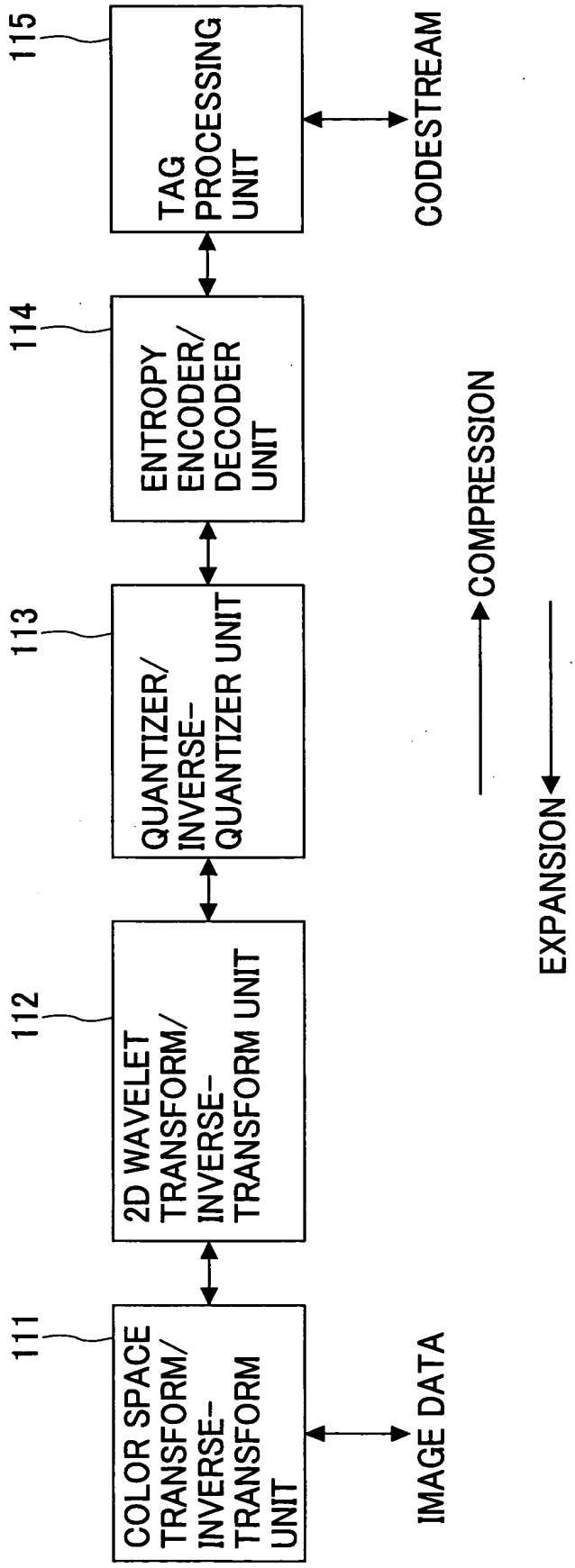

111
COLOR SPACE TRANSFORM/ INVERSE- TRANSFORM UNIT
IMAGE DATA
112
2D WAVELET TRANSFORM/ INVERSE- TRANSFORM UNIT
113
QUANTIZER/ INVERSE- QUANTIZER UNIT
114
ENTROPY ENCODER/ DECODER UNIT
115
TAG PROCESSING UNIT
CODESTREAM
COMPRESSION
EXPANSION

FIG.2

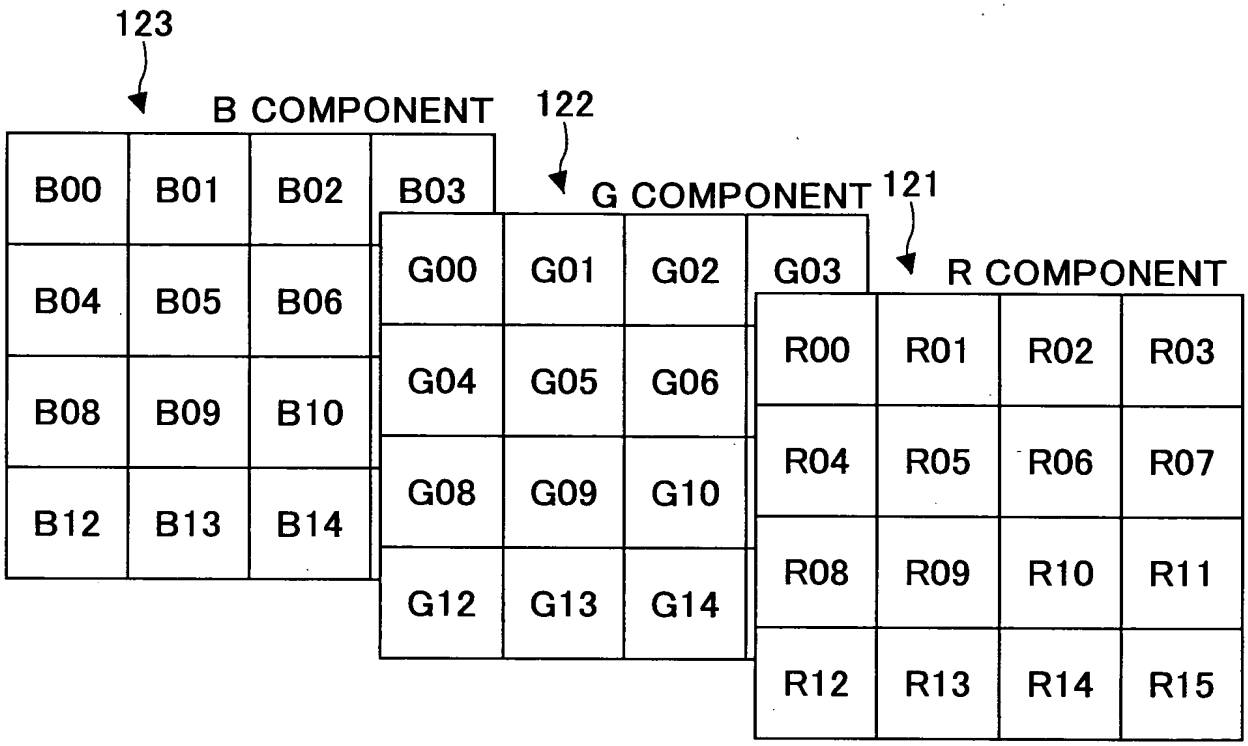
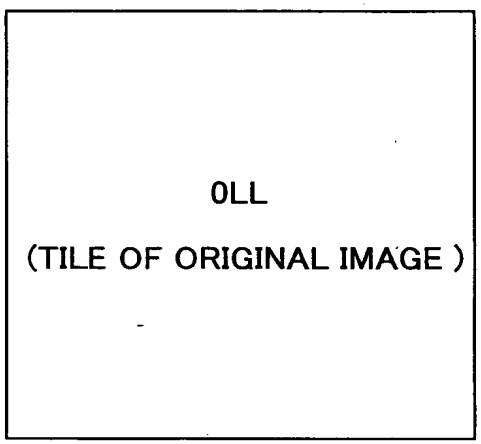
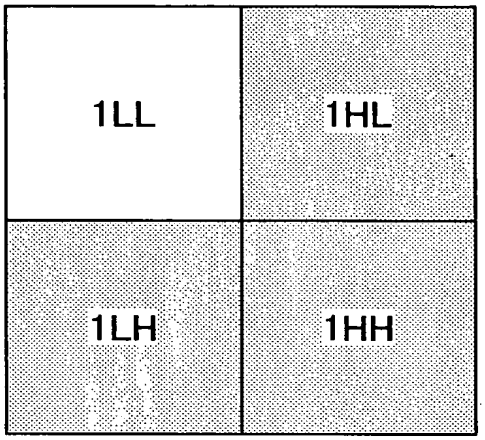

123
B COMPONENT
122
G COMPONENT
121
R COMPONENT
B00 B01 B02 B03
B04 B05 B06
B08 B09 B10
B12 B13 B14
G00 G01 G02 G03
G04 G05 G06
G08 G09 G10
G12 G13 G14
R00 R01 R02 R03
R04 R05 R06 R07
R08 R09 R10 R11
R12 R13 R14 R15

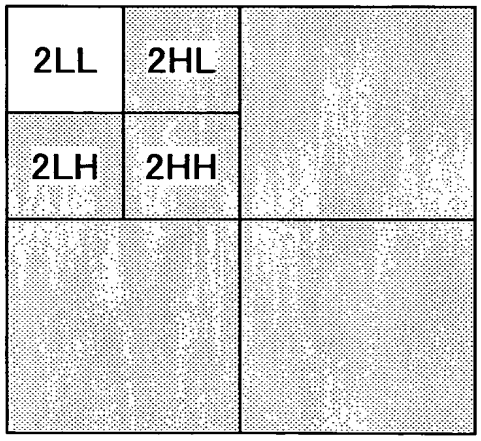
FIG.3



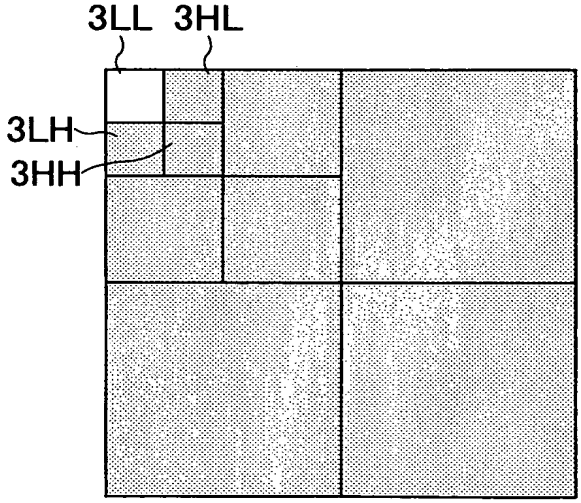
DECOMPOSITION LEVEL-0



DECOMPOSITION LEVEL-1



DECOMPOSITION LEVEL-2



DECOMPOSITION LEVEL-3

FIG.4

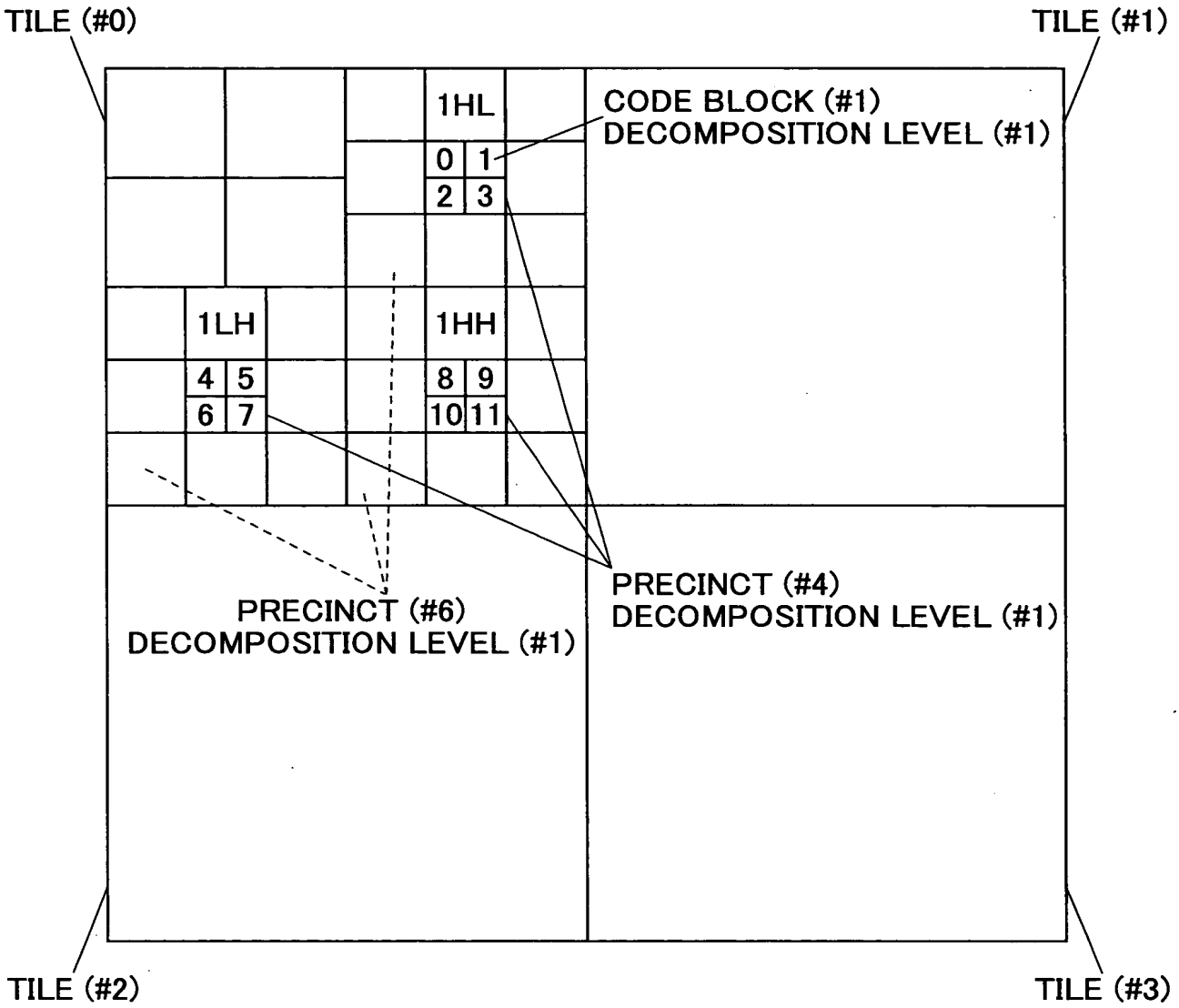

TILE (#0)
TILE (#1)
1HL
0 1
2 3
CODE BLOCK (#1)
DECOMPOSITION LEVEL (#1)
1LH
4 5
6 7
1HH
8 9
10 11
PRECINCT (#4)
DECOMPOSITION LEVEL (#1)
PRECINCT (#6)
DECOMPOSITION LEVEL (#1)
TILE (#2)
TILE (#3)

FIG.5

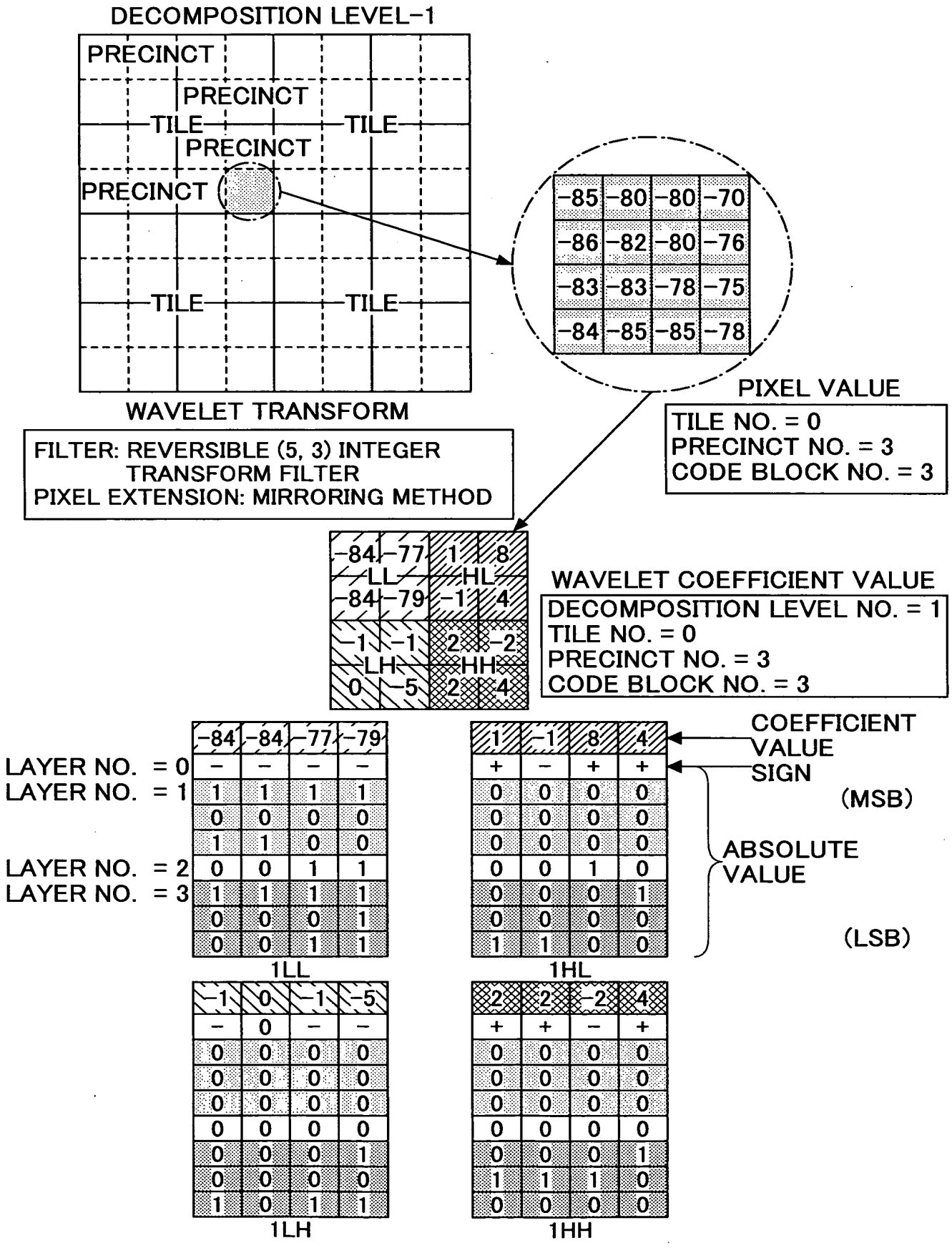

DECOMPOSITION LEVEL-1
PRECINCT
PRECINCT
TILE
TILE
PRECINCT
PRECINCT
TILE
TILE
-85 -80 -80 -70
-86 -82 -80 -76
-83 -83 -78 -75
-84 -85 -85 -78
PIXEL VALUE
TILE NO. = 0
PRECINCT NO. = 3
CODE BLOCK NO. = 3
WAVELET TRANSFORM
FILTER: REVERSIBLE (5, 3) INTEGER TRANSFORM FILTER
PIXEL EXTENSION: MIRRORING METHOD
-84 -77 1 8
LL HL
-84 -79 -1 4
-1 -1 2 -2
LH HH
0 -5 2 -4
WAVELET COEFFICIENT VALUE
DECOMPOSITION LEVEL NO. = 1
TILE NO. = 0
PRECINCT NO. = 3
CODE BLOCK NO. = 3
COEFFICIENT VALUE
SIGN
(MSB)
ABSOLUTE VALUE
(LSB)
LAYER NO. = 0
LAYER NO. = 1
LAYER NO. = 2
LAYER NO. = 3
1LL
1HL
1LH
1HH

FIG.6

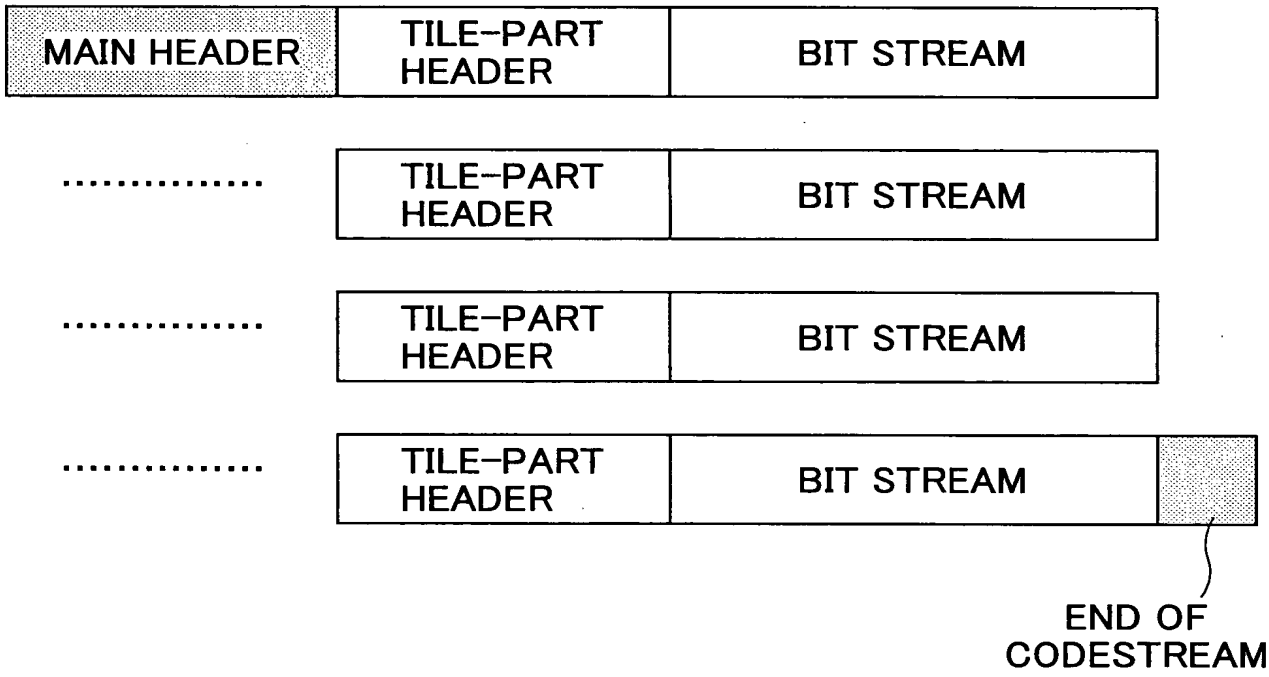

MAIN HEADER
TILE-PART HEADER
BIT STREAM
TILE-PART HEADER
BIT STREAM
TILE-PART HEADER
BIT STREAM
TILE-PART HEADER
BIT STREAM
END OF CODESTREAM

FIG.7

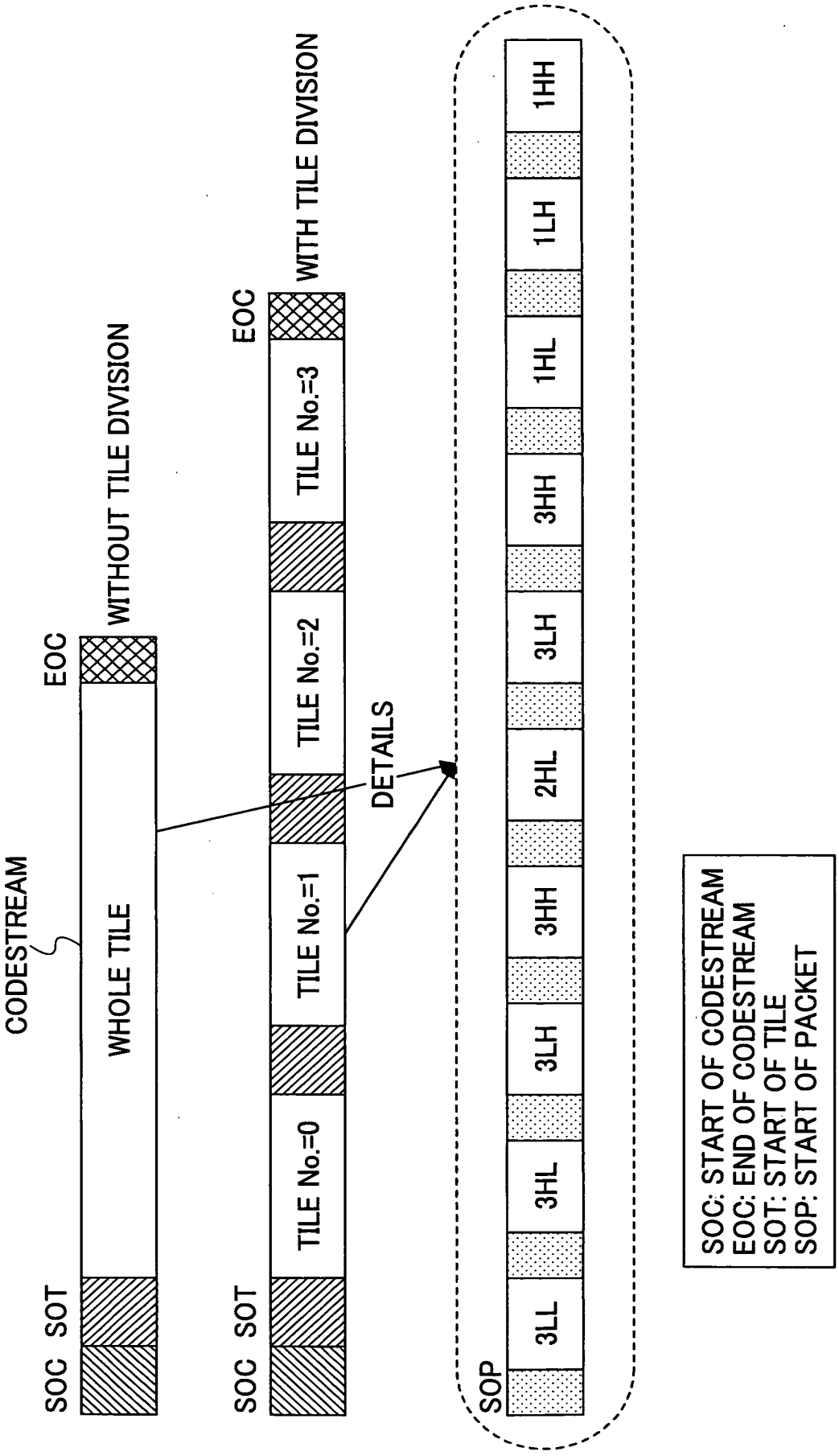

CODESTREAM
WHOLE TILE
WITHOUT TILE DIVISION
SOC
SOT
EOC
TILE No.=0
TILE No.=1
TILE No.=2
TILE No.=3
WITH TILE DIVISION
DETAILS
SOP
3LL
3HL
3LH
3HH
2HL
3LH
3HH
1HL
1LH
1HH
SOC: START OF CODESTREAM
EOC: END OF CODESTREAM
SOT: START OF TILE
SOP: START OF PACKET

FIG.8

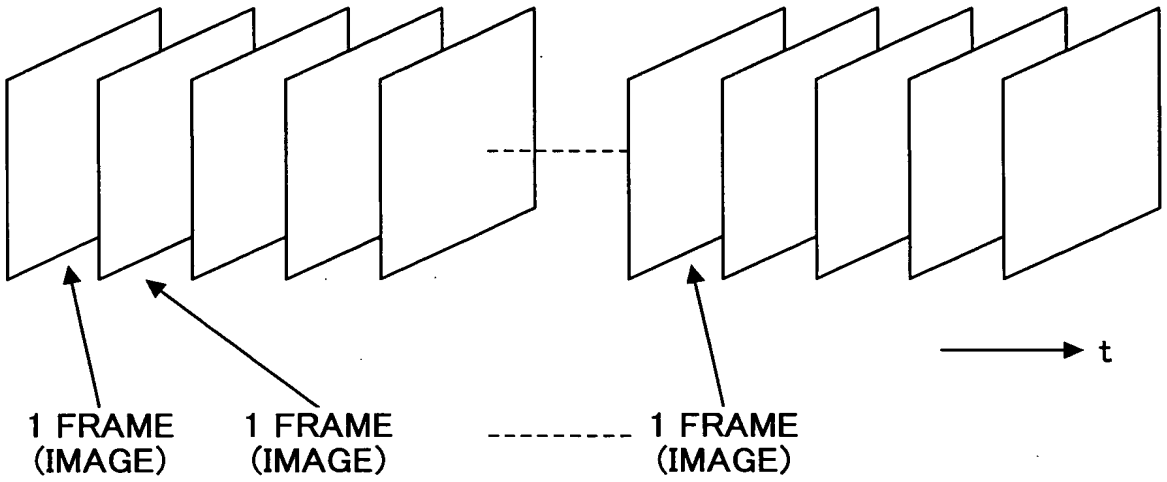


FIG.9

D0	V0	D1
H0	X	H1
D2	V1	D3

FIG.10

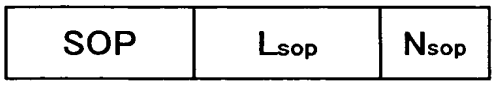

SOP
Lsop
Nsop

FIG.11

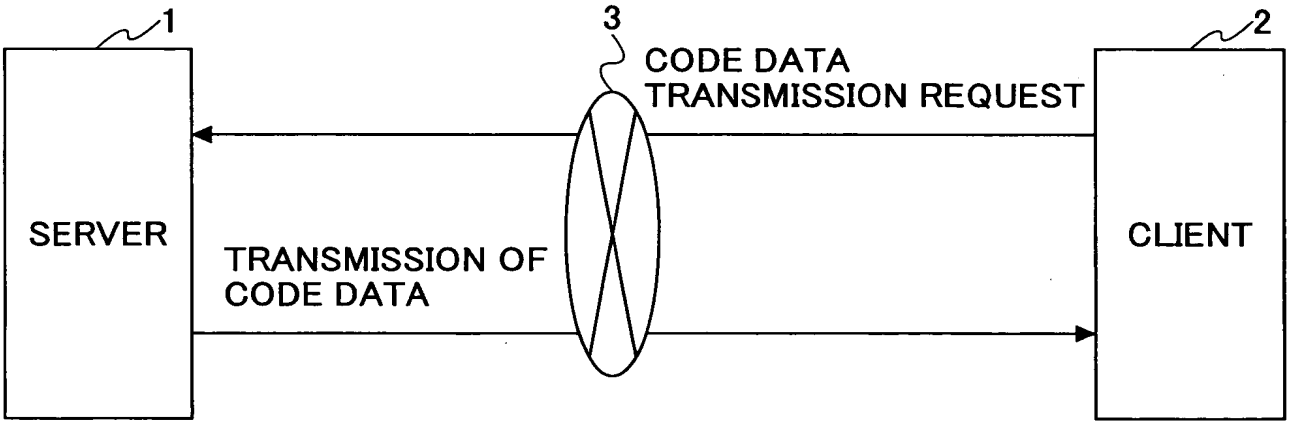

1
3
2
CODE DATA
TRANSMISSION REQUEST
SERVER
TRANSMISSION OF
CODE DATA
CLIENT

FIG.12

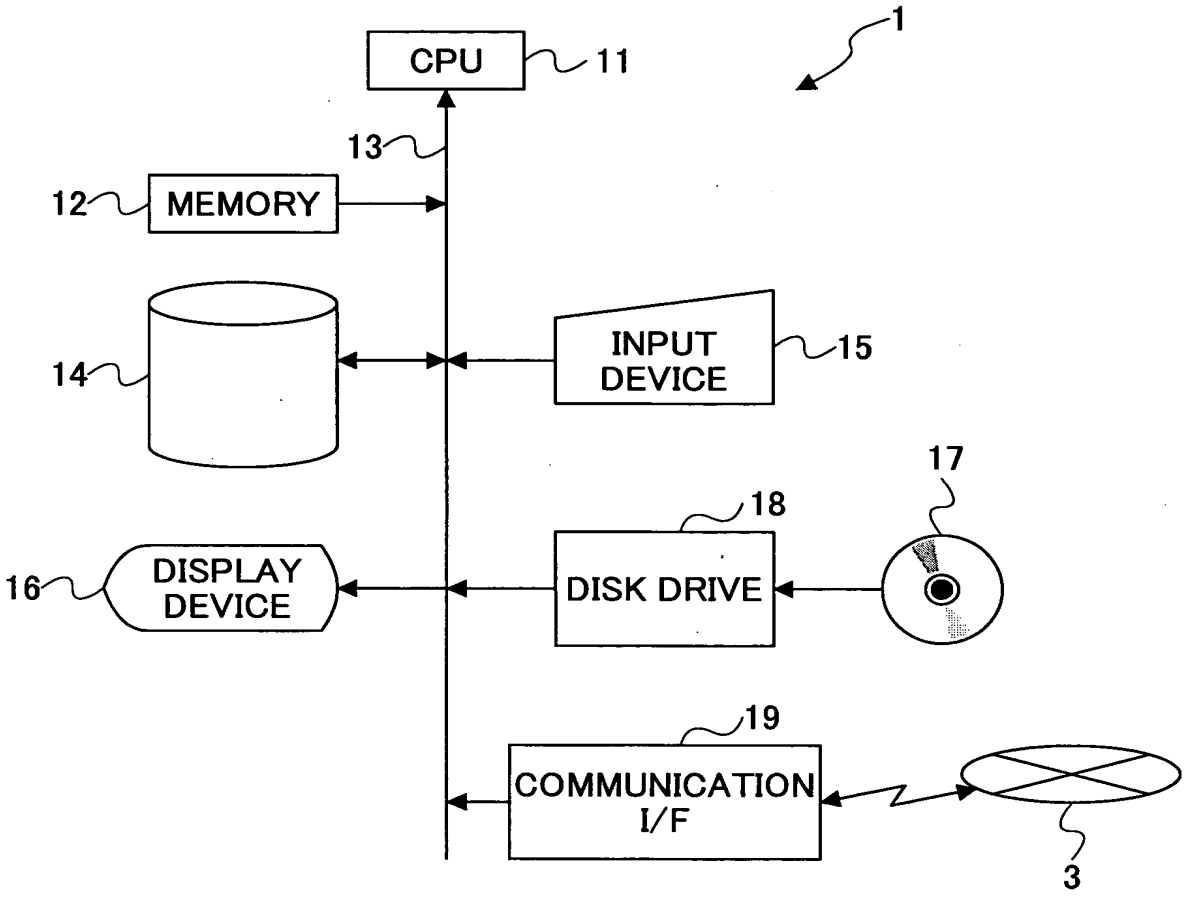

1
CPU
11
13
12
MEMORY
14
INPUT DEVICE
15
17
18
16
DISPLAY DEVICE
DISK DRIVE
19
COMMUNICATION I/F
3

FIG.13

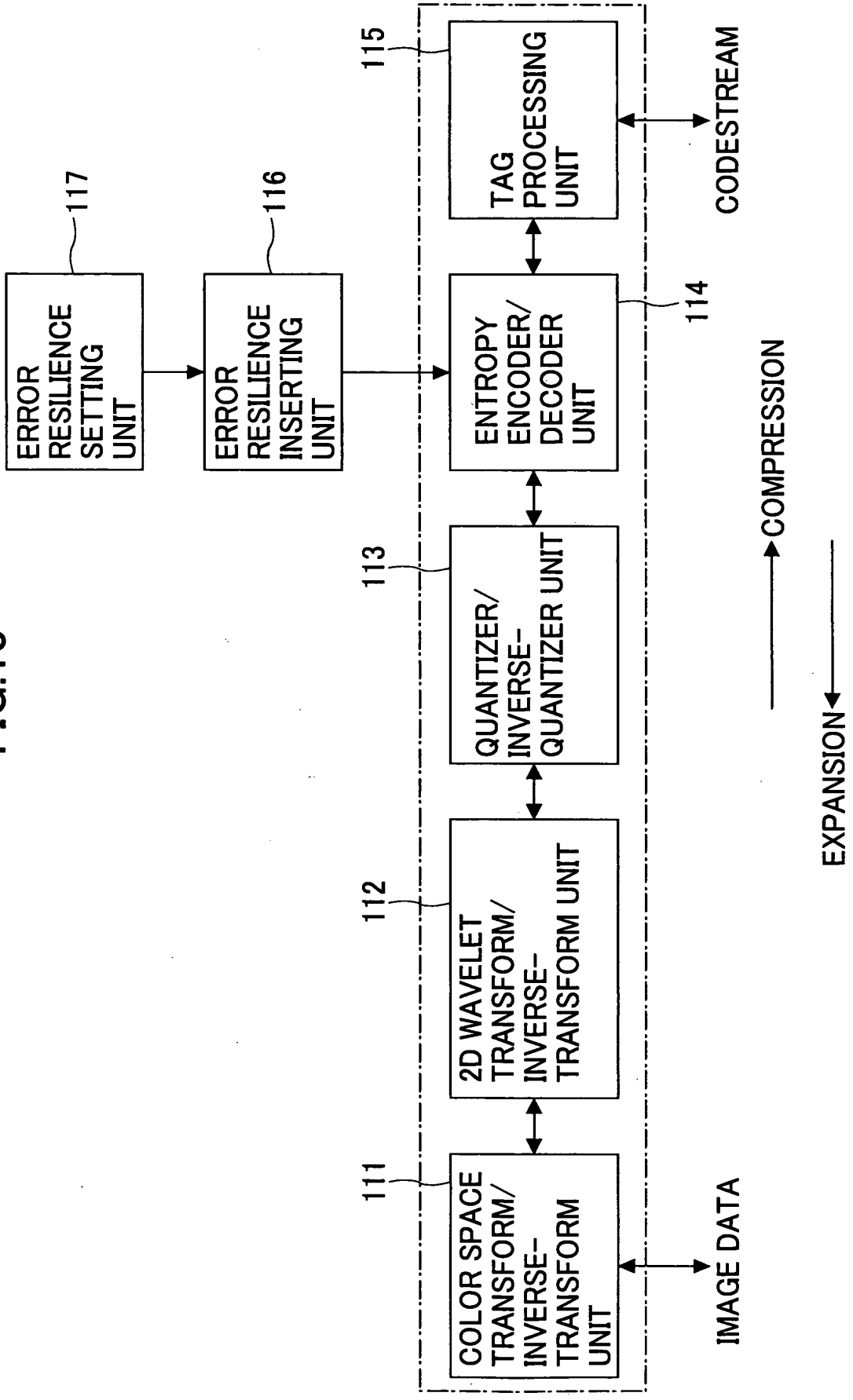

ERROR RESILIENCE SETTING UNIT
117
ERROR RESILIENCE INSERTING UNIT
116
TAG PROCESSING UNIT
115
ENTROPY ENCODER/ DECODER UNIT
114
QUANTIZER/ INVERSE- QUANTIZER UNIT
113
2D WAVELET TRANSFORM/ INVERSE- TRANSFORM UNIT
112
COLOR SPACE TRANSFORM/ INVERSE- TRANSFORM UNIT
111
CODESTREAM
IMAGE DATA
COMPRESSION
EXPANSION

FIG.14

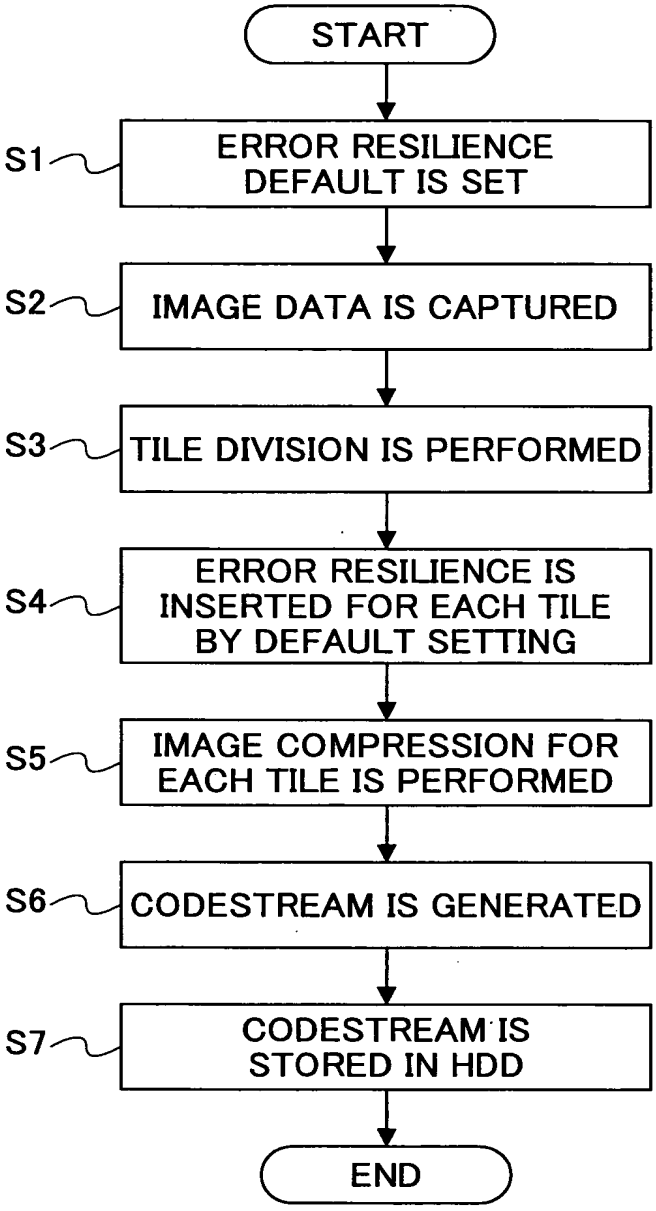

START
S1
ERROR RESILIENCE DEFAULT IS SET
S2
IMAGE DATA IS CAPTURED
S3
TILE DIVISION IS PERFORMED
S4
ERROR RESILIENCE IS INSERTED FOR EACH TILE BY DEFAULT SETTING
S5
IMAGE COMPRESSION FOR EACH TILE IS PERFORMED
S6
CODESTREAM IS GENERATED
S7
CODESTREAM IS STORED IN HDD
END

FIG.15A

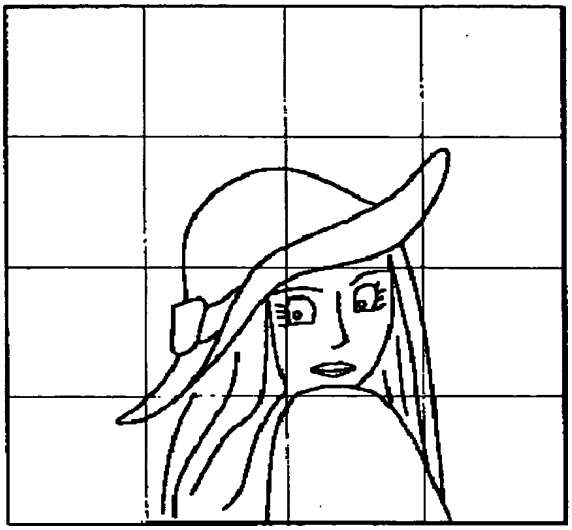


FIG.15B

TILE-0	TILE-1	TILE-2	TILE-3
TILE-4	TILE-5	TILE-6	TILE-7
TILE-8	TILE-9	TILE-10	TILE-11
TILE-12	TILE-13	TILE-14	TILE-15

FIG.16

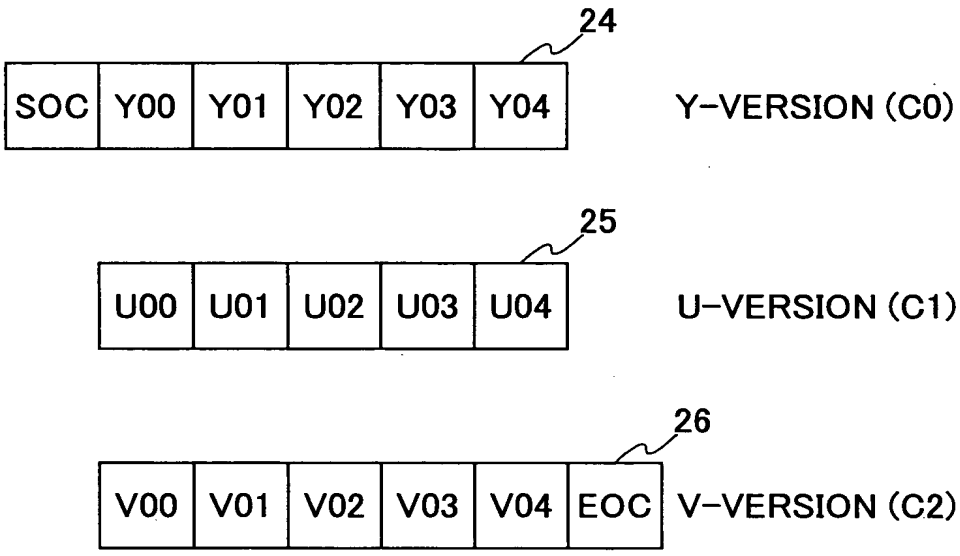

24
SOC
Y00
Y01
Y02
Y03
Y04
Y-VERSION (C0)
25
U00
U01
U02
U03
U04
U-VERSION (C1)
26
V00
V01
V02
V03
V04
EOC
V-VERSION (C2)

FIG.17

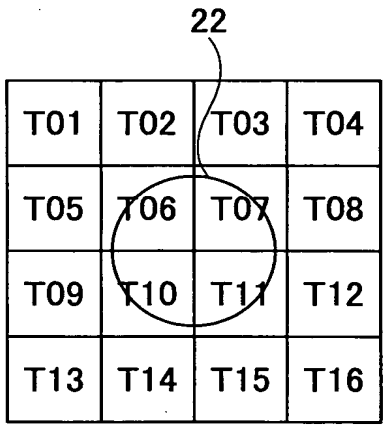
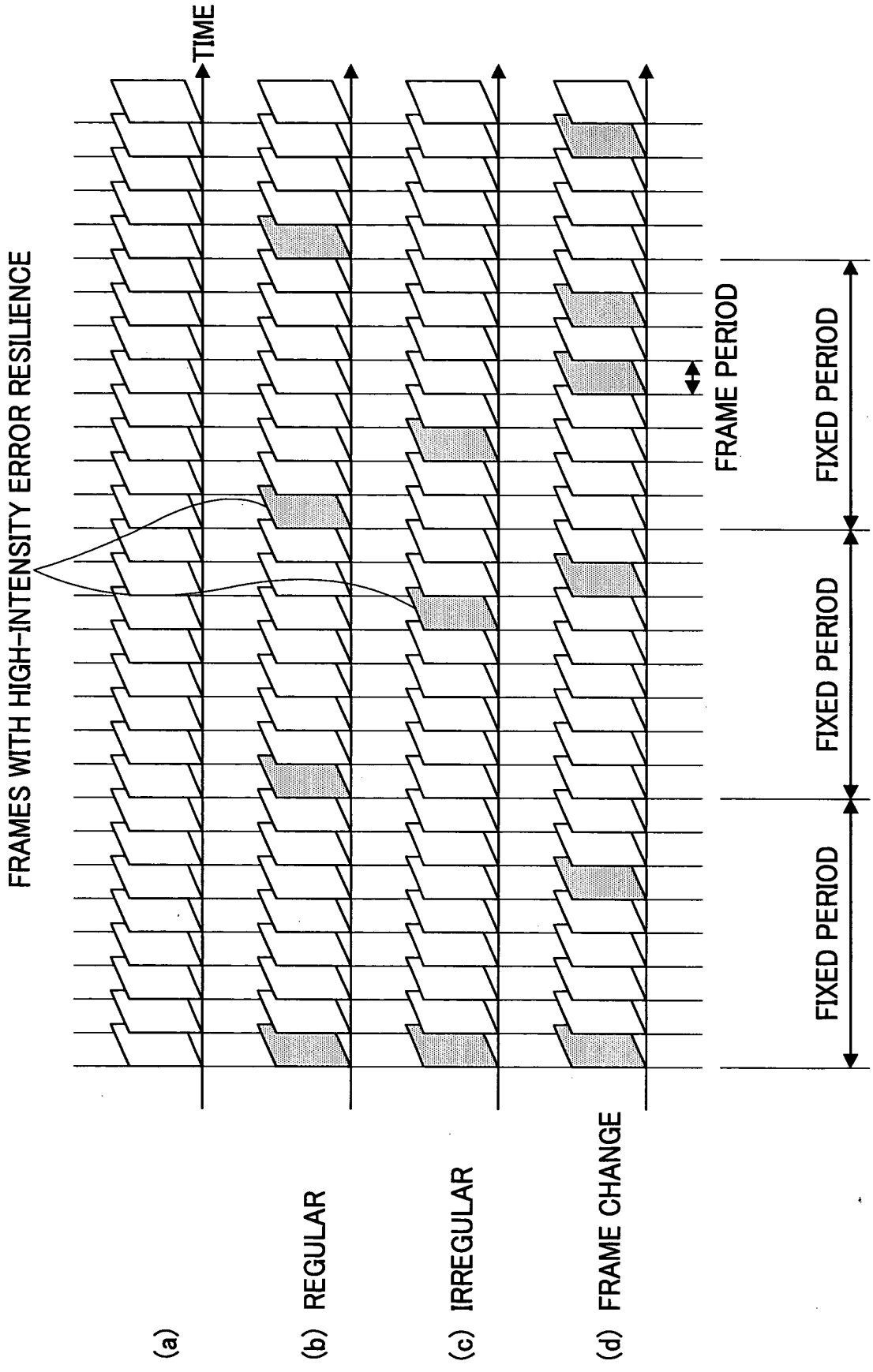

22
T01
T02
T03
T04
T05
T06
T07
T08
T09
T10
T11
T12
T13
T14
T15
T16

FIG.18

TILE NO. / LAYER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
12	2	2	2	2	2	6	6	2	2	6	6	2	2	2	2	2
11	2	2	2	2	2	6	6	2	2	6	6	2	2	2	2	2
10	2	2	2	2	2	6	6	2	2	6	6	2	2	2	2	2
9	2	2	2	2	2	6	6	2	2	6	6	2	2	2	2	2
8	1	1	1	1	1	5	5	1	1	5	5	1	1	1	1	1
7	1	1	1	1	1	5	5	1	1	5	5	1	1	1	1	1
6	1	1	1	1	1	4	4	1	1	4	4	1	1	1	1	1
5	1	1	1	1	1	4	4	1	1	4	4	1	1	1	1	1
4	0	0	0	0	0	3	3	0	0	3	3	0	0	0	0	0
3	0	0	0	0	0	3	3	0	0	3	3	0	0	0	0	0
2	0	0	0	0	0	2	2	0	0	2	2	0	0	0	0	0
1	0	0	0	0	0	2	2	0	0	2	2	0	0	0	0	0

FIG.19


TIME
FRAMES WITH HIGH-INTENSITY ERROR RESILIENCE
FRAME PERIOD
FIXED PERIOD
FIXED PERIOD
FIXED PERIOD
(a)
(b) REGULAR
(c) IRREGULAR
(d) FRAME CHANGE